

Flexible Pavement Committee

Meeting Minutes

December 17, 2001 Turnpike Turkey Lake Facility in Orlando

The meeting was called to order by co-chairman Gale Page and Jim Warren at 10:00 a.m. Gale provided some welcoming comments and discussed how the committee works. A signup sheet was passed and Jim Warren requested that those who wanted to be on the mailing list to indicate so on the form. All correspondence related to this meeting is done through the FPC mailing list that Jim Warren keeps. Anyone wanted to be on the list should send email to jwarren@acaf.org After self-introductions, the agenda was discussed.

Agenda:

1. *Status of Florida sections at NCAT Test Track.* www.pavetrack.com (Sections S-6 & S-7) -- Greg Sholar discussed. 5.3 million ESAL's applied to date. 0.1" average rut depth track-wide, coarse mixes average 0.14 inches; fine mixes average 0.17 inches. Coarse mixes are rutting on average 20% less, PG 76-22 (modified asphalt) rutting 37% less than PG 67-22. Road spray reduction noticed with more open-textured mixes with OGFC having the least spray. Gale Page discussed future work at the track and handed out a letter from NCAT. Page has suggested that NCAT consider doing a large-scale national validation of the AASHTO 2002 Design Guide.

1a. *Coarse versus Fine mixes.* FDOT initially required coarse exclusively for high traffic areas at the start of SP. There is still not a firm consensus to change to allow fine or coarse at this point in time. Frank Rader: will FDOT do away with the restricted zone like AASHTO? Gale Page: If the restricted zone is eliminated, we need to define the difference between C/F because of mix property differences (permeability, density). Jim Musselman – There will probably be a single point on the top of the current restricted zone (north side), which will differentiate between coarse and fine. Waiting on AASHTO to vote on. Earliest could be 6-12 months. In the meantime FDOT would entertain the option of changing an existing Traffic level D/E project to a fine graded PG 76-22 modified mix to gain some experience and performance data.

2. *Future for Florida participation in second round of NCAT test track: 3 options currently presented by NCAT.* Page discussed a memo from the NCAT test track manager on proposal for 2003 re-construction once this round of testing is complete. Originally paid \$490,000 for first two test sections and three years of trafficking. Replacement sections 'inlays' will run \$115,000 per year per section. To continue tracking only, cost is \$75,000 per section per year. Page discussed options, and would have preferred NCAT proposing a comprehensive plan to validate the 2002

design guide. FDOT has the HVS, so justifying continued work at NCAT may be difficult. Track does offer some excellent comparison activities and testing that Florida doesn't have. Warren will discuss these issues at the next NCAT Applications Steering Committee meeting.

3. *Discuss Superpave Base spec. Current proposal is square yards to be consistent with optional base.* Musselman – based on comments, the specification was revised and now accounts for adjusted thickness. Ananth Prasad – discussed items in detail. Dave Hay and Jon Chellgren commented.

4. *Discuss QC2000 asphalt spec comments.* Musselman presented overview of modifications to proposed specifications. Lab size – require multiple tests to be able to be performed simultaneously, keeping the minimum size the same: Slope, temp, yield can be done under direction of a CTQP Paving Level 2

- Paving in Rain – The lot size will remain the same. Evaluate as defective material if needed. Chellgren – definition of rain can be very subjective. Page – hopefully new spec will help clarify.
- Cross-slope – start at 100 ft, change to 250 feet if consistent. Recordation is still a problem, especially at night – how do you see stationing? Chellgren -- will add to cost of building projects. Prasad -- as we get more data, we might be able to reduce frequency. Page – x-slope is important, need to ensure we get it.
- QC requirements in 330 that were applicable for Type S only have been moved to 331 – DOT doesn't have a choice at this point but to move it elsewhere.
- Testing RAP for Viscosity: Will be contractor's responsibility due to SMO privatization efforts – there are other commercial labs available to run these.
- Lost or misplaced samples in QC2000 – new language.
- Static compaction for fine graded mixes if required by FDOT – target density lowered.
- Spec. Tolerances for FC-5 – to be finalized.

5. *Discuss future use of ARB versus PG 76-22. Should FPC recommend a technical solution or alternative? Does the PG 76-22 offer some engineering properties that ARB does not?* Page – item has been discussed over the past year.

Developments in research from the HVS in FL and test sections in other states show dramatic improvements with regards to rutting with modification. Results from NCAT test track confirm this as well. FC-6 in intersections – is 5% rubber doing enough in this area? PG-76-22 may be more of an appropriate use in these areas. There is a strong belief that there would be a significant benefit of using PG76-22 in the last layer prior to friction course on interstate level pavements. Other issue is FC-5 and maybe allowing 76-22 as an alternate. Chellgren – a large capital investment on asphalt plants may need to be required, are we getting the ROI on the rubber prior to changing the type of modification. What are the political ramifications of changing?

- a. Last layer of structural. Comments: Trueblood -- If you modify can you go to fine graded? Choubane – big difference at the HVS – unmodified has twice rutting as modified sections. Page -- no real modifications needed at asphalt plant to run PG76-22. Musselman – most pavement distress in FL is cracking – modified binders may help improve crack resistance. Uwaibi – Pavement management is waiting on FPC decision prior to making any changes in the Flexible Pavement Design Manual. Page -- cost analysis: adding modifier will increase material cost, but in the big picture of total project cost, it should not be a big issue. Frank Fee – Mississippi has a test project that contains 8 sections including GTR – report is available. Hand vote: 35 for, 1 against, Chellgren - need to carefully develop implementation guidelines. Schiess – may not be needed everywhere. Upshaw – may help cracking resistance. Conclusion: recommend from FPC to management to modify last structural layer on limited access facilities.
- b. 76-22 in FC-6. Current practice – use only as required using current guidelines. Asphalt Pavement Analyzer results – Howie Moseley – presented APA test results for fine SP-12.5. Rut depth was less with 76-22 (4.5 mm), ARB-5 (5.6 mm), 67-22 (7.3 mm). Mark Garcia – is it significant? Worth the cost? How does APA pass compare to actual traffic loading? Don Siler: How long would it take to get into play on actual projects? Page – FDOT will be sensitive to that issue. Uwaibi – need to change Flex. Pavement Design manual – would take 1-1/2 years to get on the street. Conclusion: continue current practice at this time.

5a. Discuss program for use of modified asphalt; last layer before OGFC for high traffic roadways, FC-6 in urban intersections. See above:

6. Can PG 67-22 can be substituted for PG 64-22, since PG 67-22 meets all the performance requirements for PG 64-22? Page – there is a paragraph in PG spec to account for binders used with RAP that may be too stiff. FDOT will continue to monitor recovered mix viscosities and if too high will require the Contractor to take appropriate action.

7. CTQP:

- a. *QC 2000 Orientation* – 4-hour course – non-required, explains QC2000 concepts.
- b. *Quality Control Manager Course* – several Technical Walk Throughs have been completed. The pilot course is scheduled for January 24-25, 2002. 1.5 days. Must have a minimum of one CTQP level 2 qualification to become qualified as a QC Manager.
- c. *QC 2000 Asphalt Specification Refresher Course*: 1 day, starting July 2003, focusing on QC 2000 asphalt specifications, extends qualification 5 years. Other courses will be updated to reflect new QC 2000 specifications.
- d. *Construction Management Academy*: February 17-22, 2001 Gainesville (will get QC Manager qualification as part of it.).

- e. *Asphalt self-studies*: final stages of editing – should be available in next couple months, required for DOT only, recommended for everyone else. These also need to be updated for QC 2000 in future.

8. *FC-5 minimum temperature* - should there be a cut-off time / calendar date?

Musselman – new wording: can go lower (to 60F) if texture is ok and the Engineer approves. Prasad – new procedure, based on long-term forecast, weather days can be assigned. This should be in place by March.

9. *Superpave Gyratory Compactor - internal angle verification procedure*. External calibration procedure may not provide accurate readings of angle under load. Internal Angle verification kit developed through a national study. FDOT has a kit and is participating in the initial development of a procedure. It appears as though the internal angle of a SGC is less than the external angle. Goal is to reduce variability between SGC across state. Implementation procedure will need to be established.

10. *Heavy Vehicle Simulator (HVS) status*. The HVS is down for the month of December for maintenance purposes. Temperature chamber has been added as well as Laser to map in 3D the profile of the roadway. Link to website has data. Current testing of existing sections should be concluded by summer. Next sections have not yet been established. This will be discussed at next FCPE meeting Jan 8.

11. *4.75 mm mixes for low volume roads*. Considered modeling the Georgia specification for trial projects – violates AASHTO Superpave requirements, not recommended. Some national work being done, draft AASHTO specification should be out in January 2003, SMO will do some research on the new spec to determine potential for DOT use, maybe as a leveling course. Musselman – is industry concerned with possible shorter performance periods for this mix? Warren – only if used in the wrong application, the product has been used up to this point as an alternative to microsurfacing and life is expected to be 6-10 years for low volume roadways (county/city).

12. *Adding a pay item for driveways instead of being included in SP tonnage price – status report*. Currently lumped together in mainline tonnage and this item could overrun a high percentage. This should be paid for separately maybe under Turnout Construction pay item.

13. *DOT Project 93005-3506 Yamato Road, Palm Beach County, (bid Dec 01,) 75mm Curb Pad Superpave only. Why does this require Superpave? Shouldn't this be Misc. Asphalt?* Should be a pavement design issue.

14. *Pre-treatment of aggregate stockpiles with lime*. Eric Berger, Chemical Lime made a presentation of use of slurry treatment to pre-treat granite aggregates in lieu of adding the lime at the plant. A number of questions were raised regarding TSR, shelf life, etc. Current specification doesn't restrict the use of the lime slurry.

Recommendation was made for the lime and granite suppliers to work with the asphalt contractors and find a couple pilot projects and FDOT to consider accepting certification that the lime has been added to the granite. Will monitor projects and adjust specification as necessary.

15. *FC-6 (Oolite - Granite only)*. Musselman provided some background information on the development of the FC-5 specification and the rationale behind requiring only granite or Oolite materials. Upshaw -- FC-6 recommendations are based on the District 2 task team. Some friction numbers on the FC-6 are not as high as expected. Recommended elimination of any use of non-polish resistant aggregates and use only materials approved for friction courses. District 2 plans to test several types and combinations of materials, including the old FC-4 sand. Current specification allows up to 40% non polish resistant aggregate, the current proposal drops to 0% at least until the data is there to support a change to increase.

Banning: Can we get these test sections built through SA to speed up the process?

Jeff Ferrell: if 60% granite projects are doing fine, why require 100%? Dave

Drehmer: What about projects with a history of good skid resistance? ACTION ITEMS:

1. Re-look at data FC-6 Granite/Oolite combinations with other materials.
2. DOT will start revoking mix designs when low friction numbers are consistently obtained.
3. Ananth Prasad will see if District 2 can expedite the test sections.

16. *EPR-1 prime - two projects have been constructed and we would like to briefly discuss the results.* Two projects (Milton, Miami), SMO looked at the projects and when the product is properly diluted 2 to 1 and properly applied, the material worked fine. Ronnie Blackledge said a simple bake off test could quickly determine the amount of dilution in the field.

17. *Discuss the logistics of using modified binder in intersections.* Design (Manny Uwaibi) should require a minimum of 1000 tons of mix and require all lifts to be modified. Ronnie Blackledge – said the small quantities still might be a construction problem. Gale Page – Designers need to make good engineering decisions when setting up these projects.

18. *Rice dry back study.* Page – looking to develop a correction factor that can be used in lieu of performing the dry back portion of the test. Greg Sholar: 600 data points from various producers, mixes, aggregate type. There is a consistent shift in the data with most all aggregates. Cabbage Grove is the most variable. Establish an initial correction factor on mix design or preferably with plant produced mix. Sholar will establish the criteria and work with industry to try some pilot projects.

18a. Corelock – SMO evaluation is waiting on an ASTM test method and precision statement. Elimination of dry back in current procedure for Gmm should reduce test time significantly.

19. *Rut resistance of 9.5mm vs. 12.5mm fine graded Superpave mix. Done.*

20. Carryover items from last meeting. None

21. Other items. None

Adjourned at 3:00 p.m.

FPC MTG - 12/17/01

<u>Name</u>	<u>Organization</u>	<u>email</u>	<u>ADD TO LIST</u>
Gale Page	FDOT Mail Off	gale.page@dot.state.fl.us	
Emmanuel Uwabi	FDOT CO	emmanuel.uwabi@dot.state.fl.us	
ANANTH PRASAD	FDOT SCO	ananth.prasad@dot.state.fl.us	
MARK GARCIA	FDOT D-5	mark.garcia@dot.state.fl.us	
RON MEADE	FDOT D-5	RON.MEADE@dot.state.fl.us	
GREG SHOLAR	" SMO	gregory.sholar@dot.state.fl.us	
JON CHELLGREN	PAVEX	JCHELLGREN@PAVEX.COM	
JIM MUSSELMAN	FDOT SMO	jim.musselman@dot.state.fl.us	
Charles Holzscher	FDOT SMO	charles.holzscher@dot.state.fl.us	
Howie Moseley	FDOT smo	howard.moseley@dot.state.fl.us	✓
Bill Franklin	LRW Engineering	bfrank12@lwr.com	
Phil Dillon	FDOT		
Lacey Alcorn	FDOT SMO		
Jim Auer	TARMI America	JimAuer@TARMIAmerica.com	-
Patrick Upshaw	FDOT SMO	patrick.upshaw@dot.state.fl.us	✓
GREG SCHIASS	FHWA	greg.schiass@fhwa.dot.gov	
JACK FANNING	FLAE	flae@duettall.com	
John Ed Hull	Vulcan Materials	HULLJE@VMCMAIL.COM	
CARL MOOREFIELD	ORLANDO PAVING CO.	C.MOOREFIELD@HUBBARD.COM	
FURT KORINER	CITGO ASPHALT	IKORINER@CITGO.COM	
Frank Fee	CITGO Asphalt	FFee@CITGO.COM	
Mike Mancusi	Middlesex Corp	MMancusi@MDL5XCO.COM	
BENJAMIN RUCKER	COASTAL REFINING + MTR	BENJAMIN.RUCKER@ELPASO.COM	
Don Buford	Blackledge Emulsions		
DAVID DeLUCA	Blackledge Emulsions	Blackledge Tampa @ AOL.COM	✓
BRITTANY Blackledge	"	brittanyblackledge@hotmail.com	
Ronnie Blackledge	"	RBLACKLIDG@aol.com	
Donald B. Siler	MAP LLC	DBSiler@MAPLLC.com	✓

(2)

Kevin Dorsey	Marathon Ashland	KJDorsey@MAPLLC.com
MIKE Burns	Florida Rock Ind.	MIKBurns@FLAROCK.COM
Dave Hay	Macasphalt	
Dave Drehmer	Macasphalt-APAC	dardrehmer@ashland.com
Shioda-San Kuo	Univ. of Central Florida	Kuo@mail.ucf.edu
Kim Thompson	Concord Yelvington Dist.	Kim.Thompson@cydi.com
Tim Phillips	P/S Paving, Inc.	Tim Phillips THill3701@AOL.com
Garry Yelvington	Concord Yelvington	garry@cydi.com
Frank Radler	APAC- Florida, Inc.	fraderdashland.com
Bonnie UnwinLundingham	White Rock Quarries	RUANLundingham@WEQUARRIES
TODD B. TRUEBLOOD	CTI	trublood@ctilabs.net
JOHN THOMPSON	CHEMICAL LINE CO	JOHN.THOMPSON@CHEMICALLINE.COM
ERIC BERGER	✓ ✓ ✓	ERIC.BERGER@CHEMICALLINE.COM
Dulne Brautigam	FDOT Specs	
BOUZID CHOUBANE	FDOT	
David Donofrio	APAC-FLA	dadonofrio@ashland.com
Tim Moore	PALM BEACH AGGREGATE	TMOORE@PALMBEACH.AGG.
Darren Teets	Palm Beach Aggregates	DTeets@PalmBeachAgg.com
Robert Bussall	Koch Pavement Solutions	Bussall@Kochind.com
Alan Cummings	Smith Curran Harsh	
MIKE SMITH	ORLANDO PAVING Co	MSmith@HUBBARD.COM
Kevin Hardin	Mariani Asphalt Co.	Kevinjhardin@earthlink.net
JACK HARDIN	" " "	JJACKHARDIN@CS.COM
JEFF Ferrell	FCS	eferrell@Rinker.com